

***Dictyocheiropora himachalensis* sp. nov. from Himachal Pradesh, India**

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ABSTRACT—A new species of sporodochial fungus, *Dictyocheiropora himachalensis*, characterized by cylindrical-ellipsoidal, pale olivaceous-brown conidia composed of seven non-complanate rows of cells, is described and illustrated. A comparative table of *Dictyocheiropora* species is provided.

KEY WORDS—appendages, *Dictyosporiaceae*, *Pleosporales*, asexual fungi, subtropical

Introduction

India is one of the richest reservoirs of the mycological diversity in Asia. In recent years many wood-inhabiting macrofungi and hyphomycetes have been first discovered in India (Adamčík & al. 2015; Buyck & al. 2017; Prasher & Verma 2014, 2015a,b,c, 2016; Rajeshkumar & al. 2018, 2021; Sushma & al. 2020; Verma & al. 2019, 2021a,b,c,d). Himachal Pradesh, located in

Northwestern India, ranges in altitude from 350–6975 m a.s.l. Its average rainfall of 907–1242 mm year favors an inestimable wealth of macro- and microfungi.

During a survey of microfungi in Mandi district (subtropical monsoon, mild and dry winter, hot summer) of Himachal Pradesh, an interesting fungus was collected from bark of *Eucalyptus* species. Critical morphological examination and comparison revealed the specimen to represent an undescribed species of *Dictyocheiropora* (Boonmee & al. 2016; Wang & al. 2016; Hyde & al. 2017, 2019; Tibpromma & al. 2018; Yang & al. 2018; Jayasiri & al. 2019; Phookamsak & al. 2019; Phukhamsakda & al. 2020). The fungus is proposed as a new species, *Dictyocheiropora himachalensis*, and described and illustrated. A synopsis of the morphological characters of the 23 *Dictyocheiropora* species is included.

Materials & methods

Decaying twigs, decayed wood, and bark were collected into separate Ziplock plastic bags and taken to the laboratory. For light microscopy examination, the specimens were mounted on glass slides in 4% KOH or lactophenol cotton blue (0.01% cotton blue in lactophenol). The specimens were studied under Vevor stereo trinocular VL-Z60 and VRS-2f compound microscopes for macroscopic and microscopic characters. All measurements were made using Pro MED software. The specimen was deposited in the herbarium of Panjab University, Chandigarh, India (PAN).

Taxonomy

Dictyocheiropora himachalensis Sushma, Rajn.K. Verma, Prasher,

A.K. Gautam, Rajeshk. & R.F. Castañeda **sp. nov.**

FIGS 1, 2

IF 559461

Differs from *Dictyocheiropora musae* by its bigger conidia

TYPE —India. Himachal Pradesh: Mandi, Sarkaghat, on bark of *Eucalyptus* sp., 17 July 2015, Sushma (**Holotype**, PAN 31572).

ETYMOLOGY—the epithet refers to place of collection, Himachal Pradesh

CONIDIOMATA on the natural substrate, sporodochial, scattered, olive to dark blackish brown. Mycelium mostly immersed. CONIDIOPHORES hyaline, thin walled, short, $10\text{--}12 \times 3\text{--}4 \mu\text{m}$, mostly reduced to conidiogenous cells. CONIDIOGENOUS CELLS monoblastic, cylindrical, determinate, pale brown. CONIDIA cylindrical-ellipsoidal, smooth walled, pale olivaceous brown, not flattened, $32\text{--}48.5 \times 14.5\text{--}19 \mu\text{m}$, truncate at the basal cell, composed of seven appressed rows of 6–8 cells, with 1–3 apical, sub-apical, or central, aseptate, hyaline appendages, $3.5\text{--}11.6 \mu\text{m}$ wide.

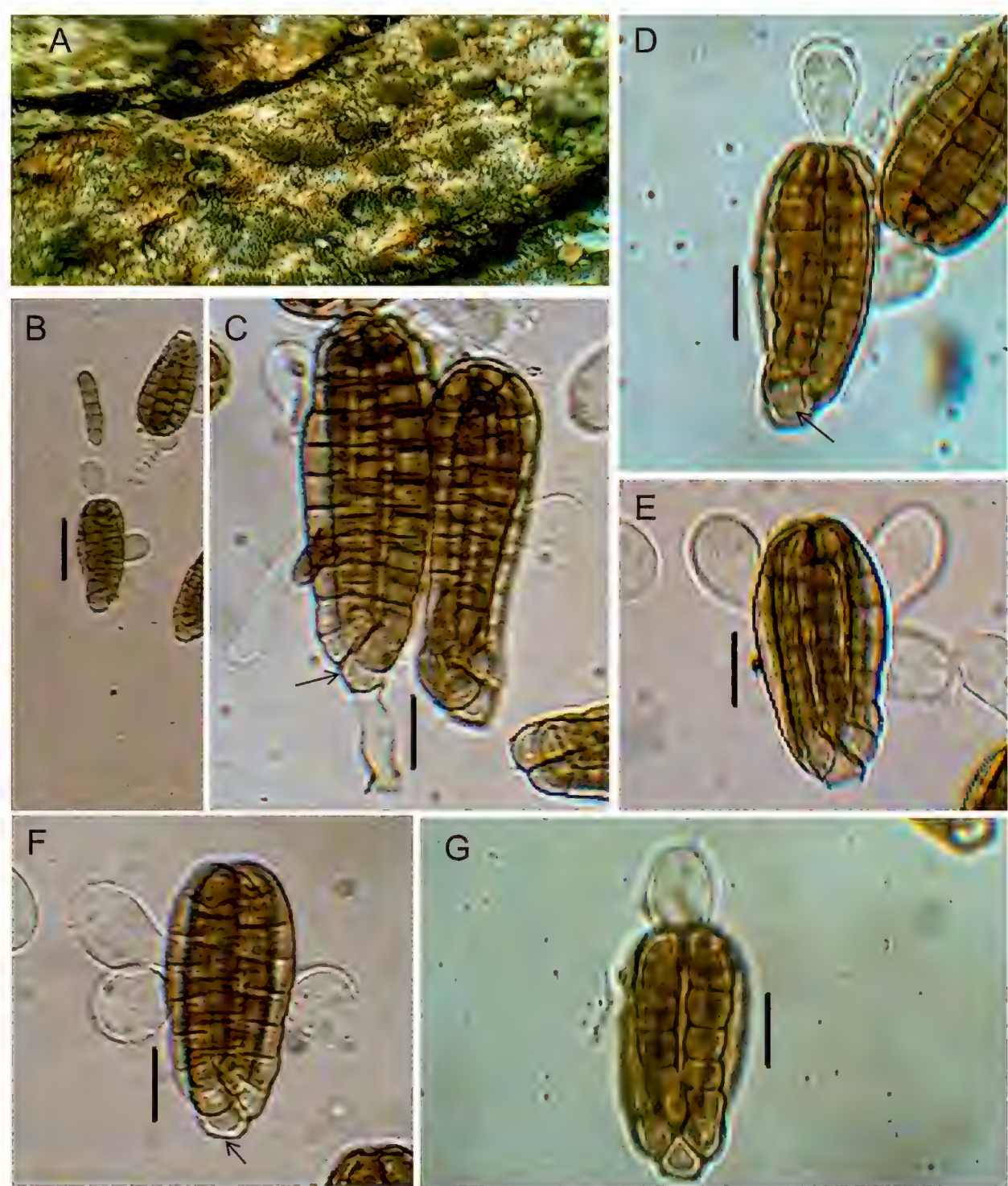


FIG. 1. *Dictyocheiropsora himachalensis* (PAN 31572). A. Sporodochia on natural substrate; B–G. Conidia with appendages [C, D, F with arrows showing basal cell]. Scale bars: B = 20 μm ; C–G = 10 μm .

Discussion

Dictyocheiropsora was established by Boonmee & al. (2016) with *D. rotunda* M.J. D’souza & al. as the type species and proposing two other new species (*D. bannica* and *D. vinaya*) and four new combinations (*D. gigantea*,

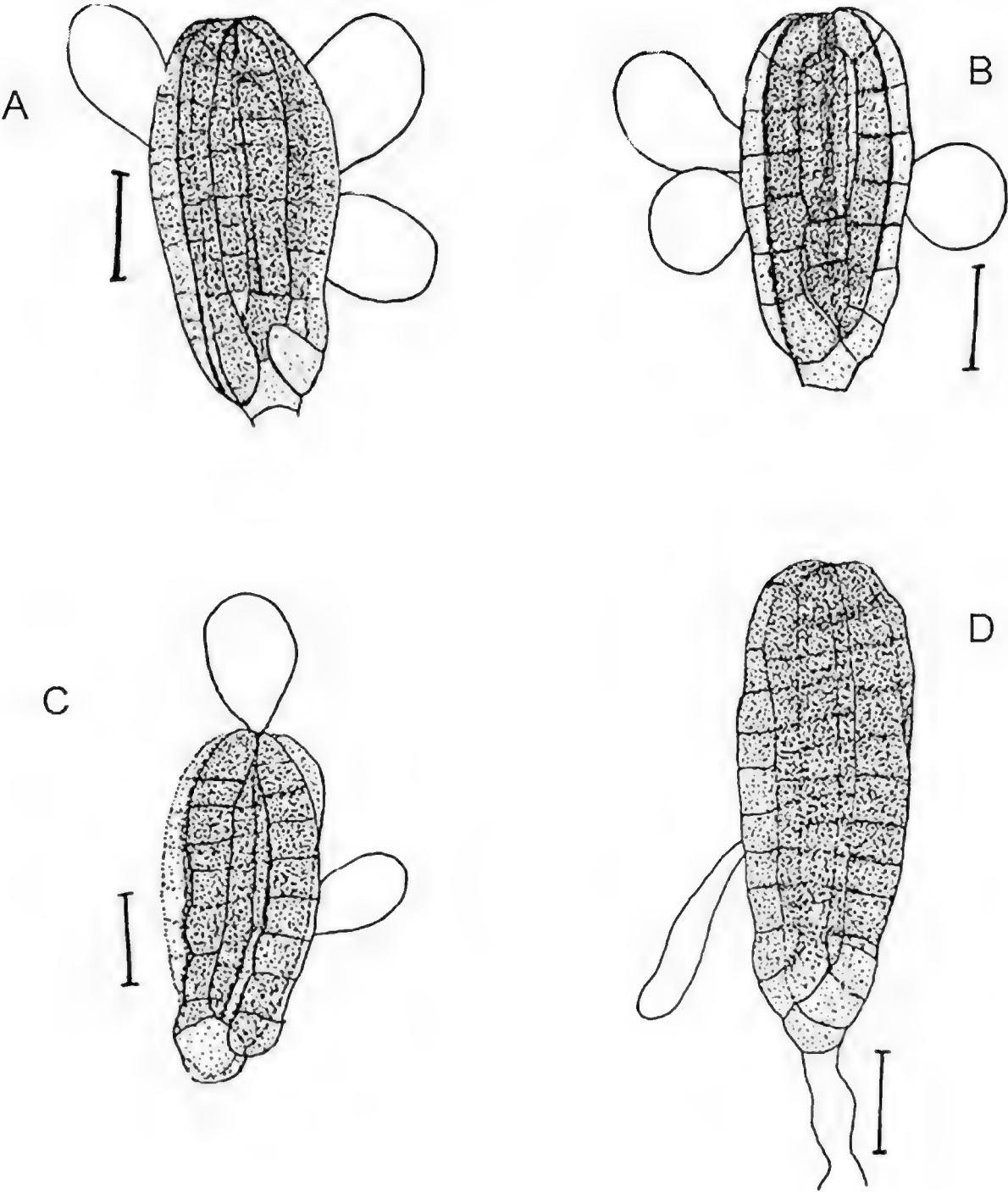


FIG. 2. *Dictyocheiropora himachalensis* (PAN 31572).
Conidia with apical, sub-apical, and central appendages. Scale bars = 10 μ m.

D. heptaspora, *D. pseudomusae*, and *D. subramanianii*). Wang & al. (2016), who described two new species, provided a synopsis of the genus. Subsequently 14 additional species and new combinations have been added by Hyde & al. (2017, 2019) Tibpromma & al. (2018), Yang & al. (2018), Jayasiri & al. (2019), Phookamsak & al. (2019), Phukhamsakda & al. (2020), and Dong & al. (2020). Twenty-three species are listed in *Dictyocheiropora* by Index Fungorum 2022.

Six *Dictyocheiropora* species have appendiculate conidia, while 16 species lack conidial appendages; all species are compared in TABLE 1 (pp. 460–461). *Dictyocheiropora himachalensis* differs from all other appendiculate conidial species in the positioning of its 1–3 conidial appendages, which are apical and central as well as subapical. The new species is distinguished from *Dictyocheiropora hydei* with suprabasal conidial appendages, *D. indica* with complanate conidia and fewer, subapical appendages, and *D. musae* with bigger conidia.

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TABLE 1. Synopsis of the morphological characters of *Dictyocheiropora* spp.

SPECIES	APPENDAGES		SHAPE, NUMBER	SIZE [µm]	ROWS OF CELLS	REFERENCES
	Size [µm]	POSITION				
<i>D. aquadulcis</i>	—	—	—	60-80 × 17-29	7	Hyde & al. 2019
<i>D. aquatica</i>	—	—	—	34-42 × 12.5-19.5	5-6	Wang & al. 2016
<i>D. bannica</i>	—	—	—	73-86 × 21-26	5-7	Boonmee & al. 2016
<i>D. cheiropora</i>	—	—	—	54-63 × 15-26	5-7	Hyde & al. 2017
<i>D. clematidis</i>	—	—	—	42-60 × 15-30	6-7	Phukhamsakda & al. 2020
<i>D. garethyonesii</i>	—	—	—	45.5-54.5 × 15.5-24.5	6-7	Wang & al. 2016
<i>D. gigantea</i>	—	—	—	105-121 × 25-32	7	Goh & al. 1999, Boonmee & al. 2016
<i>D. heptaspora</i>	—	—	—	50-80 × 25-22	7]	Damon 1952, Boonmee & al. 2016
<i>D. himachalensis</i>	3.5-11.6 diam.	Apical, subapical, and central	Variously shaped, 1-3	32-48.5 × 14.5-19	7	Present study
<i>D. hydei</i>	12-15 × 9-14	Basal	Globose to circular, 1-3	30-35 × 14-17	7	Prasher & Verma 2015a, Yang & al. 2018
<i>D. indica</i>	5-13 × 5-7	Subapical	Obovoid; 1-2	36-46 × 13-18	6(-7)	Prasher & Verma 2015a, Yang & al. 2018
<i>D. lithocarpus</i>	—	—	—	35-40 × 12-18	6	Jayasiri & al. 2019

SPECIES	APPENDAGES		CONIDIA [µm]	REFERENCES
	SIZE [µm]	POSITION	SHAPE, NUMBER	SIZE [µm]
<i>D. metroxyloni</i>	—	—	—	45–69 × 15–29
<i>D. musae</i>	12–28 × 3–9	Central	Clavate to obovoid, 1–3	45–65 × 20–27
<i>D. nabaanheensis</i>	5–16 × 5–6.5	Near middle of conidial rows	Rounded to cylindrical; 1–2	35–40 × 18–21
<i>D. pandanicola</i>	—	—	—	60–75 × 18.5–35.5
<i>D. pseudomusae</i>	6–11.5	Apical or side of outer rows	(Sub)globose, 1–2	61–78 × 19–29
<i>D. rotunda</i>	—	—	—	42–58 × 19–38
<i>D. subramanianii</i>	—	—	—	33–42 × 10–8
<i>D. taiwanense</i>	—	—	—	74–84 × 16–20
<i>D. tetraploides</i>	10–25 × 5–10	Subapical	Cylindrical to clavate; 2	52.5–72.5 × 18.5–26.5
<i>D. thailandica</i>	—	—	—	42–65 × 20–45
<i>D. vinaya</i>	—	—	—	58–67 × 15.5–26.5
<i>D. xishuangbannaensis</i>	—	—	—	35–50 × 17–25
				6
				6–7
				6–7
				5
				5
				7
				5–7
				6–7
				5–7
				6
				7
				4–6

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